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Studying Absorption Line Feature in the Relativistic
Jet Source GRS 1915+105
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The galactic superluminal source GRS 1915+105 is among the most interesting objects in our Galaxy. It is subject to erratic accretion instabilities with energization of relativistic jets producing X-ray, optical and radio emission. This source was observed by ASCA on Sept. 27 1994, April 20 1995, October 23 1996 and April 25, 1997 as part of a long timescale investigation [1]. We detected strong variability of the source, and in particular the existence of burst/dip structure in October 1996 and April 1997. Clear evidence of transient absorption features at 6.7, 7.0 and 8.0 keV was obtained for the first time in September 1994 and April 1995. Given the phenomenology of plasmoid energization and ejection, these transient spectral features might be produced by material entrained in the radio jets or in other high-velocity outflows. Our contribution to the interpretation is to incorporate these observations into a overall theoretical picture for GRS 1915+105 also taking into account other observations by XTE and BSAX. The emerging picture is complex. The central source is subject to (most likely) super-Eddington instabilities mediated by magnetic field build-up, reconnection and dissipation in the form of blobs that eventually leads to the formation of transient spectral features from the surrounding of the plasmoid emitting region. A comprehensive theoretical investigation is in progress [2].

References

- [1] Ebisawa, K., et al., 1997, in "X-ray imaging and spectroscopy of cosmic hot plasmas", p. 427, Universal Academy Press.
- [2] Tavani, M., 1999, in preparation.